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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/789,103

02/27/2004

Qingguo Wu

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7687

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06/21/2007

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EXAMINER

CHEN, BRET P

ART UNIT

PAPER NUMBER

1762

MAIL DATE

DELIVERY MODE

06/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/789,103	Applicant(s) WU ET AL.	
	Examiner B. Chen	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12, 15-33, 45 and 49-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 15-33, 45 and 49-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-12, 15-33, 45, and 49-51 are pending in this application.

The Terminal Disclaimer filed 4/26/07 was approved by the Office. In view of the properly filed Terminal Disclaimer, the obviousness double patenting rejection has been withdrawn.

In view of newly found art, the application contains a new art rejection. The examiner regrets the inconvenience.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-7, 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Rhee et al. (WO 03/005429). Rhee discloses a method of making a low dielectric film in a chemical vapor deposition chamber in which an oxygen plasma gas is used (p.1 lines 5-7). Specifically, Rhee teaches that the CVD process is conducted by using an organosilane or organosilicate compound having at least one vinyl or ethinyl group to form a dielectric constant of 2.6 or below (p.2 lines 7-16). In one embodiment, the organosilane or organosilicate compound can be ethynyltrimethylsilane (p.5 lines 6-13 and Example 8) which contains a carbon-carbon triple bond and the oxygen containing gas can be O₂, N₂O, O₃, H₂O₂, CO₂, H₂O, and a mixture thereof (p.6 lines 7-9). Appropriate plasma power, flow ratios, pressures, temperatures and plasma

Art Unit: 1762

power are disclosed (p.6 lines 27-34). The substrate is placed in the deposition apparatus (Example 1).

It is conceded that Rhee does not expressly state that a “carbon doped silicon oxide film” is prepared. It should be noted however, that the method steps taught by Rhee are substantially the same as those recited in applicant’s independent claim 1. Thus, in effect, Rhee inherently teaches making a carbon doped silicon oxide (CDO).

Claims 10-12, 20, 26-30, 32 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rhee et al. (WO 03/005429).

Rhee discloses a method of making a low dielectric film by a plasma chemical vapor deposition process as taken above. However, the reference fails to teach using the oxygen precursor as a carrier gas.

It is noted that the reference clearly reacts an organic precursor with an oxygen containing precursor as noted above. Since the organic precursor is liquid, the oxygen containing gas functions as a carrier gas. Regardless, it is well known to utilize a carrier gas when the precursor is a liquid to enhance the transportation of the precursor and hence, would have been obvious to incorporate.

In claims 26-30, the applicant requires specific bond ratios and bonds. It is the examiner’s position that these are mere characteristics of the final deposition product and hence, would be inherent to the claimed product. Regardless, it is noted that the reference teaches the variations of carbon contents and dielectric constants (p.3). It is the examiner’s position that this

Art Unit: 1762

would affect the bond ratios and bonds and hence would have been obvious to vary with the expectation of affecting the dielectric constant.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 4-5, 8, 15, 16-19, 21-25, 31, 33, 45, 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al. (WO 03/005429). Rhee discloses a method of making a low dielectric film by a plasma chemical vapor deposition process as taken above. However, the reference fails to teach a partially fabricated integrated circuit. It is noted that Rhee teaches the deposition can be utilized in ultra-large-scale integrated circuits (p.1 lines 11-13). It would have been obvious to one skilled in the art to utilize an integrated circuit in Rhee's process given the teaching that the deposition is used in the manufacture of integrated circuits with the expectation of success.

In claims 15, 33, the applicant requires the use of a specific precursor. It is noted that Rhee specifically teaches the successful deposition utilizing a organosilane or organosilicate compound can be ethynyltrimethylsilane which contains a carbon-carbon triple bond. One skilled in the art after reading Rhee would reasonably expect that other organosilanes or organosilicates having a carbon-carbon triple bond would behave similarly. Hence, it would have been obvious to one skilled in the art to substitute one similar material for another with the expectation of obtaining similar results.

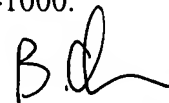
Art Unit: 1762

In claims 16-19, 21-25, 31, the applicant requires the use of a carrier gas. It is well known to utilize a carrier gas when the precursor is a liquid to enhance the transportation of the precursor and hence, would have been obvious to incorporate. In addition, the applicant requires the precursor to have more than one precursor and specific materials. With respect to the number of precursors, it is well settled that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. With the respect of materials, it is noted that Rhee specifically teaches an organic precursor which contains a carbon-carbon triple bond. One skilled in the art would reasonably expect that similar precursors could be used and hence would have been obvious to incorporate with the expectation of obtaining similar results.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



BRET CHEN
PRIMARY EXAMINER

Bc
6/4/07